Environmental Assessment

for the Installation of the

Taylor Mountain Long-Range Radar System

Taylor Mountain, Alaska

354 CES/CEVP
Eielson AFB, Alaska
June 2005

Report Documentation Page

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Finding Of No Significant Impact (FONSI)
for the
Environmental Assessment to Install a Long Range Radar Facility at Taylor Mt., Alaska

Introduction

The 354 FW directs operations, training, and support for F-16CG and A/OA-10 precision weapons systems. They also oversee operations and training for Air Liaison Officer (ALO) and Tactical Air Control Party (TAC-P) combat teams that support ground operations through the lethal application of airpower. The 354 FW provides expeditionary combat ready forces for worldwide employment across the full spectrum of air and space operations. The complex combat scenario training requirements and advanced capabilities of the aircraft require large expanses of airspace to train. The Military Operating Areas (MOAs) in Alaska these aircraft use cover large areas and are jointly used by civilian and commercial aircraft as well as the military. It is imperative that adequate radar and radio coverage for these areas exist to ensure aircraft safety. Currently, areas within this airspace do not have adequate coverage.

Proposed Action

The proposed action would result in the construction of a new TPS-77 system on the summit of Taylor Mountain near Chicken, Alaska. This facility would include a diesel generator and three 10,000-gallon fuel tanks. In addition a 7.9-mile road would be built to provide access to the site for initial construction as well as hauling fuel and servicing the facility once it is operable. The project will result in impacts to 3.57 acres of black spruce scrub/shrub wetlands.

Alternatives to the Proposed Action

Alternative 1 would result in the installation of a radar and communications facility on Taylor Mountain that would be accessed by helicopter only. No access road would be constructed under this alternative. Alternative 2 would result in the installation of a radar and communications system on Ketchumstuck Mountain located 49 miles northeast of Tok, Alaska and 20 miles west of the Taylor Highway. This would also be a fly-in only site.

No Action Alternative

Under the no action alternative, existing long-range radar and ground-to-air coverage would not be expanded and no additional radar equipment would be installed. This would result in no improvements to air traffic safety in the MOAs that are currently deficient in coverage.

Environmental Impacts of the Proposed Action

Biological Resources

Up to 47.8 acres of recently burned over vegetation will be hydro-axed to clear the access road right-of-way. Some disturbance to soils will occur with activities associated with the construction of the road that will extend 7.9 miles from the Taylor Highway to the radar site on the summit of Taylor Mountain.

Wetlands

Approximately 3.57 acres of black spruce scrub/shrub wetlands will be filled during construction of the access road. Culverts will be placed using a design that meets with Alaska Department of Natural Resources Habitat Management and Permitting requirements.

Threatened or Endangered Species

According to U.S. Fish and Wildlife Service, there are no known threatened or endangered species within the region or the proposed project area. However, the proposed project site is within the range of the American peregrine falcon (*Falco peregrinus anatum*), which was removed from the list of threatened and endangered species in 1999. Peregrine falcons are an infrequent migrant to the area.

Historical or Cultural Resources

The project area was surveyed in August of 2004 and no cultural resources were identified. If during construction there is any finding of archeological evidence, a qualified archeologist would evaluate the site prior to any further disturbance and notify the State Historic Preservation Office of their findings.

Recreational Values

The placement of a radar facility on Taylor Mountain would likely result in impacts to scenic values. The area is within 5 miles of a Wild and Scenic River system and no other man-made structures currently exist in the area. The facility access road will likely increase recreational use of the area.

Air Quality

The proposed action will have minor air quality impacts during construction due to fugitive dust and machinery exhaust. Such impacts will be highly localized and temporary in nature. The facility will be powered by diesel generators which will cause some minor impacts from diesel emissions.

Mitigation

Best management practices were incorporated into the design of the project during the project scoping process. No additional mitigation was required by state and federal agencies for any aspect of the proposed work**.**

Public Comment

No public comment was received from the public noticing of the Draft EA/FONSI.

Findings

Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) implementing regulations for NEPA (40 CFR Part 1500-1508), and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the Air Force has conducted an EA for the construction of a radar facility and access road at

Taylor Mountain. This FONSI/FONPA has been developed pursuant to information provided in the accompanying EA.

Finding of No Practicable Alternative: The 354 FW mission requires that a complex range training facility be available to adequately prepare its aircraft pilots. To ensure aircraft safety Eielson AFB must have adequate radar and radio coverage within the ranges and airspace that they train. Taking all the environmental, economic, and other pertinent factors into account, pursuant to Executive Order 11990, the authority delegated by SAFO 780-1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the proposed action includes all practical measures to minimize harm to the environment.

Finding of No Significant Impact: Based on this environmental assessment, which was conducted in accordance with the requirements of NEPA, CEQ, and Air Force Instructions, I conclude the construction of a radar facility at Taylor Mountain will not result in significant impacts to the environment. I also find that the preparation of an environmental impact statement is not warranted.

Timothy A. Byers 13 JUN 05

TIMOTHY A. BYERS, Colonel, USAF Date
The Civil Engineer

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1.0 Purpose and Need for the Action

Section 1.0 provides a description of the purpose and need for the proposed action.

1.1 Background and Objectives for the Proposed Action

1.1.1 The 11th Air Force (Headquarters, Elmendorf AFB, Alaska), under the direction of the North American Aerospace Defense Command (NORAD), is proposing to install a radar and communications system on Taylor Mountain, located approximately 145 miles southeast of Eielson Air Force Base (**Figure 1**). Installation of a new radar system would provide additional Long-Range Radar (LRR) coverage of the airspace over and surrounding the Fort Greely National Missile Defense System. Existing radar systems do not have the capability of providing the required long-range radar coverage for the Fort Greely area. The National Missile Defense System, otherwise known as the Ground-based Midcourse Defense (GMD) system, is based at Fort Greely which is located approximately 100 miles southeast of Fairbanks, Alaska.

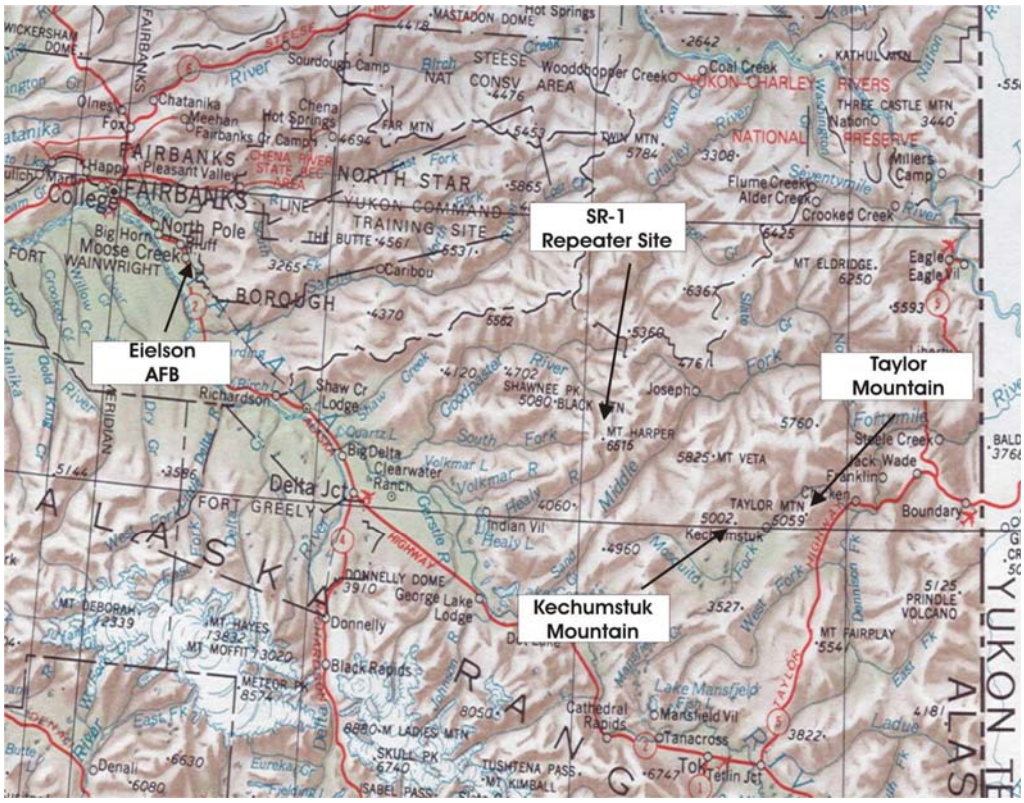

Figure 1 – General Site Location

1.1.2 The proposed installation of the radar system on Taylor Mountain would also provide long-range radar coverage for Alaska's eastern airspace region. The area of coverage would include the Yukon 3 Military Operating Area (MOA), the Buffalo MOA, and the area known as the Northway Corridor. The Northway Corridor is defined as the airspace above and 15 nautical miles along either side of the Alaska-Canada Highway. The Northway Corridor is the primary civil aviation corridor used by both private and commercial aircraft for travel between Alaska and Canada. The radar could provide a feed to the Federal Aviation Administration (FAA) for traffic separation between military and civilian aircraft operating within the Northway Corridor.

1.1.3 The communications equipment at this site would also provide ground-to-air transmit and receive (GATR) VHF/UHF radio capability within the eastern Pacific Alaska Range Complex (PARC). The ground-to-air radio system is used to transmit voice and keying signals for both military and civilian aircraft in or near Military Operating Areas and restricted areas. Long-range radar is used for ground control intercept during Major Flying Exercises and is also used by Eielson Air Force Base Range Control for monitoring military and civilian aircraft flying in Pacific Alaska Range Complex airspace and is integral to the mandated Special Use Airspace Information Service (SUAIS).

1.1.4 The Special Use Airspace Information Service was established to enhance communication between civilian and military operations and relies on information provided by radar coverage of these areas. This service is designed to increase the real time awareness of both military and civilian pilots operating in Military Operating Areas. This service is limited to providing basic information pertaining to the status of operations in an area and is not intended to provide air traffic control services, flight plan filing, or weather information. The Special Use Airspace Information Service is mandated through the Alaska Military Operations Areas Environmental Impact Statement which establishes the PARC airspace. The SUAIS also provides another avenue for reporting known information on any aircraft-reported emergency or other hazard and could potentially be used as an aid to search and rescue activities.

1.1.5 Existing Pacific Alaska Range Complex radar coverage supports approximately 45% of the airspace below 2,000 feet above ground level (AGL) and 75 per cent of the airspace below 5,000 feet AGL. Complete radar sensor coverage of the entire Pacific Alaska Range Complex airspace at all altitudes is not economically feasible due to the mountainous terrain. However, it is the goal of the United States Air Force (USAF) to achieve 70 per cent coverage at 2,000 feet AGL and 90 per cent coverage at 5,000 feet AGL within each Military Operating Area. It is also the goal of the USAF to provide ground-to-air radio coverage over at least 90 per cent of the Military Operating Areas at 2,000 feet AGL. The USAF considers this to be an operationally acceptable and realistic goal. The proposed radar installation located on Taylor Mountain would aid in achieving this objective.

1.1.6 Increased radar coverage would also allow the USAF to expand the functional area within the Pacific Alaska Range Complex that is available for training and exercises.

Presently, the majority of training and exercises occurring within the PARC is done in the central airspace where there is sufficient radar and radio coverage to track exercise participants. Expanding radar and radio coverage further into the range allows control of more airspace. In addition to increased long-range radar coverage for the Fort Greely National Missile Defense System and the Northway Corridor, the proposed radar installation would provide additional radar coverage and training opportunities in the Yukon 1, 2, and 3 MOA and in Range 2202. It is the goal of the USAF to gain FAA approval for Eielson Air Traffic Control of PARC airspace during exercises. Additional radar systems certifiable by the FAA for Eielson Air Traffic Control are required to support this objective.

1.1.7 To achieve these objectives, the USAF proposes to install a TPS-77 radar and communications system on Taylor Mountain. A 7.9 mile access road to the Taylor Mountain site would also be constructed under the proposed action. The relatively flat summit of Taylor Mountain is conducive to radar site construction, and provides the required line-of-sight necessary for a microwave data-link. Taylor Mountain is readily accessible for installation of a radar system and also meets the necessary long range radar coverage requirements. For these reasons, the USAF proposes to install a radar and communications site on Taylor Mountain.

1.2 Location of the Proposed Action

1.2.1 Taylor Mountain is located 54 nautical miles northeast of Tok, Alaska, 145 miles southeast of Eielson Air Force Base, and 40 miles west of the Alaskan/Canadian border (**Figure 1**). The proposed radar and communications site would be located on the summit of Taylor Mountain, which lies approximately 6 nautical miles west of the Taylor Highway at 5,039 feet above mean sea level.

1.2.2 The proposed 7.9 mile access road would be constructed following an existing trail starting at mile marker 57 of the Taylor Highway (Highway 5) and would terminate at the summit of Taylor Mountain.

1.3 Alternatives to the Proposed Action

In addition to the proposed action, the following alternatives, including the no action alternative, are considered for analysis in this environmental assessment (EA).

1.3.1 Alternative 1 – Installation of a Radar System on Taylor Mountain with Fly-In Only Access

This alternative would result in the installation of a radar and communications system on Taylor Mountain that would be accessed by helicopter only. An access road would not be constructed under this alternative.

1.3.2 Alternative 2 – Installation of a Radar System on Kechumstuk Mountain

This alternative would result in the installation of a radar and communications system on Ketchumstuck Mountain located 49 miles northeast of Tok, Alaska, 20 miles west of the Taylor Highway, and 60 miles west of the Alaskan/Canadian border. This would be a fly-in only site.

1.3.3 No Action Alternative

Under the no action alternative, existing long-range radar coverage would remain the same and would not result in the installation of a radar system.

1.4 Decision to be Made

1.4.1 As required by Air Force Instruction 32-7061, an *Environmental Impact Analysis Process* (EIAP) must be completed to evaluate potential environmental consequences of the proposed Taylor Mountain Radar Installation. The completion of this EA is intended to satisfy these requirements. The proposed action and all alternatives listed in Section 1.3 are addressed in detail in Chapter 2.0 of this document. A description of the resources located at each of the alternative sites is described in Chapter 3.0, and the impacts that could result from each one are discussed in Chapter 4.0.

1.4.2 Based on the information presented in this analysis, a decision must be made whether or not to implement the proposed action. A Finding of No Significant Impact (FONSI) will be published if there is a finding of no significant environmental impacts for the proposed action. If it is determined that the proposed action will have significant environmental impacts, another alternative will be chosen for which impacts will not reach the threshold of significance.

1.4.3 Executive Order (EO) 11990 requires the heads of federal agencies to find that there is no practicable alternative before the agency can take certain actions impacting wetlands and 100-year floodplains of rivers. The proposed action would result in impacts to wetlands. There would be no impact to wetlands under alternative 1 or alternative 2. The proposed action, alternative 1, and alternative 2 would not result in impacts to 100-year floodplains.

1.5 NEPA Actions That Influence This Assessment

1.5.1 *Alaska Military Operations Areas-Environmental Impact Statement (EIS) 11th Air Force, 1995*. This EIS was prepared to address the environmental impacts of restructuring the Air Force Special Use Airspace in Alaska. This document assesses several issues including airspace management, biological resources, recreational resources, subsistence, land use, air quality, and noise as they relate to operation of military aircraft.

1.5.2 *Hill 3265 Radar Installation and Upgrade Environmental Assessment (EA) Eielson Air Force Base, 2004.* This EA was prepared to address the environmental impacts associated with the installation and upgrade of a radar and communications system on Hill 3265, Eielson Air Force Base. This document assesses several issues including biological resources, recreational resources, land use, and noise and air quality.

1.6 Project Scoping/Significant Issues

This section provides a summary of all the issues raised during the scoping process. The scoping process identifies relevant issues and establishes the limits of the environmental analysis.

1.6.1 A scoping meeting was held on April 15, 2004 and December 1, 2004 to discuss the proposed action and the various alternatives. A site visit to Taylor Mountain was conducted on August 19, 2004. The meeting and site visit involved Air Force, civilian contractors, and BESTECH personnel. As part of the scoping process, interested parties were contacted regarding the proposed project. Extensive scoping and coordination of the project was held with Alaska Department of Natural Resources Lands Division and the Habitat Management and Permitting. Section 5.0 of this document lists the individuals and groups that participated in the scoping process. The topics listed below were issues identified as relevant to the analysis process and will be addressed in detail in this document in Chapters 2, 3, and 4.

1.6.2 *Hazardous Material Releases*: The proposed radar and communication site would be powered by diesel generators. Proposed power systems would by designed to reduce the risk of a hazardous materials release (fuel, oil, and antifreeze) associated with operation of generators. Spill Prevention would include spill pallets under generators, use of double walled fuel tanks, interstitial and product monitoring on the fuel tank, and a containment area for fuel transfers. Even with these precautions, however, a malfunction in a generator or mishandling of fuel could cause a hazardous material release.

1.6.3 *Air Quality*: Diesel generators would operate on a continuous basis resulting in ongoing diesel emissions to the surrounding atmosphere.

1.6.4 *Aesthetics*: Installation of radars and antennas could impact the scenic quality of the project area.

1.6.5 *Wildlife*: Potential impacts include alteration or loss of habitat and unintentional taking of wildlife. Actions such as the installation of antenna towers and radar domes have the potential to result in avian mortality due to bird strikes on towers. Increased access may elevate the hunting pressure on caribou in the area.

1.6.6 *Safety*: Safety of military and civilian aircraft operating in MOAs without adequate long range radar coverage may be diminished.

1.6.7 *Radiation Hazards*: The installation of radar sites could result in electromagnetic radiation hazards to fuels, electronic hardware, and personnel.
1.6.8 *Wetlands:* Selection of the proposed action would result in impacts to wetlands. Approximately 3.57 acres of wetland soils would be disturbed under the proposed action. There would be no impact to wetlands with the selection of alternative 1 or alternative 2.

1.7 Federal and State Permits or Licenses Needed to Implement the Project

1.7.1 The proposed action would result in impacts to wetlands. The USAF would be responsible for procuring a Section 404 Wetland Permit from the United States Army Corps of Engineers and an Alaska 401 Water Quality certification from the Alaska Department of Environmental Conservation prior to construction.

1.7.2 The proposed action would require the construction of a road and placement of structures on state of Alaska owned lands. The USAF 354th Real Property Office would be responsible for procuring the necessary Right-of-Way permit from the Alaska Department of Natural Resources (DNR) to support this action. In addition, the USAF would be responsible for procuring the necessary land use permits from appropriate landowners for sites selected as temporary staging areas.

1.7.3 The proposed action would result in the construction of a 7.9 mile, semi-improved access road. A Title 41 Fish Habitat Permit would also need to be obtained from the Alaska Department of Natural Resources. A material sale application and permit would need to be obtained from the state of Alaska DNR Land Management Division for the purchase of road aggregate.

1.7.4 Alternative 1 and alternative 2 would result in placement of structures on state of Alaska owned lands. The USAF 354th Real Property Office would be responsible for procuring the necessary land use permit from the Alaska Department of Natural Resources (DNR) to support the selected action. In addition, the USAF would be responsible for procuring the necessary land use permits from appropriate landowners for sites selected as temporary staging areas.

1.7.5 Section 106 of the National Historic Preservation Act requires project specific identification of cultural resources. An archeological survey and 106 Consultation were completed for the proposed project (**Table 1**).

Table 1
Summary of Permits Required

Proposed Action

Permit Required	Issuing Agency
Section 404 Wetland Permit	**United States Army Corp of Engineers**
Alaska 401 Water Quality Certification	**Alaska Department of Environmental Conservation**

Right-of-Way Permit (Road and Facility)	**Alaska Department of Natural Resources**
Land Use Permit (Temporary Staging Area)	**Alaska Department of Natural Resources**
Title 41 Fish Habitat Permit	**Alaska Department of Natural Resources**
Material Sale Application and Permit	**Alaska Department of Natural Resources**
Archeological Survey and Section 106 Consultation	**Alaska State Historic Preservation Office**

Alternative 1 and Alternative 2

Land Use Permit (Facility and Temporary Staging area)	**Alaska Department of Natural Resources**

Alternative 1 and Alternative 2

Archeological Survey and Section 106 Consultation	**State Historic Preservation Office**

2.0 Description of the Proposed Action and Alternatives

Section 2.0 provides a description of alternatives considered to achieve the purpose and need described in Section 1.0. The proposed action, alternative 1, alternative 2, and the no action alternative will be addressed.

2.1 Proposed Action – Installation of a Radar System on Taylor Mountain and Construction of 7.9 Mile Access Road

2.1.1 The proposed action would result in the installation of a TPS-77 radar and communication system on Taylor Mountain (**Photograph 1**). The equipment to be installed would include a radome, communications shelter, microwave tower, three 10,000-gallon fuel tanks, diesel generators, and a grounding system. All facility components would be located on 1.0 acre upland site on the summit of Taylor Mountain at 5,040-foot elevation. During the construction period, a secured staging area would be set up for temporary storage of materials. The staging area would be located in an existing gravel pit at 57 mile Taylor Highway.

Photograph 1 – Typical Radome Structure

2.1.2 Foundation support for the radome would include placement of steel micropiles around the perimeter and construction of an elevated platform to support a 52-foot in diameter radome. The area underneath the platform would be enclosed and serve as the electronics control unit (ECU) and power distribution assembly (PDA) equipment shelter. Approximately 18 cubic yards of upland soils would be disturbed with the drilling and installation of steel pilings. A 50-foot-tall microwave tower with an 8-foot in diameter dish would be located near the summit (below line-of-sight from the radar) at 5,010 foot elevation. The tower would be placed on a 10-foot by 10-foot concrete pad.

Approximately 0.05 acres of vegetation would be disturbed with the installation of the radome and the microwave tower.

2.1.3 The grounding requirements for the electrical system would require the drilling and installation of approximately 40 grounding rods and direct burial of 200 feet of grounding cable in upland soils. The grounding system would encompass a total area of 808 square feet (0.02 acres) and would result in the disturbance of a total of 8 cubic yards of upland soils due to drilling and excavation. The grounding grid would be located adjacent to the proposed radome site.

2.1.4 The generator shelter would be placed on 4-foot by 4-foot concrete pads at each corner and diesel generators would have secondary containment capabilities. The three 10,000-gallon above ground fuel tanks would be skid mounted and consist of a double walled tank with interstitial monitoring capabilities. The generator shelter and fuel tanks would require 640 square feet of area and would be located in uplands (**Figure 2**). Approximately 0.01 acres of vegetation would be disturbed with the installation of the generators and fuel tanks.

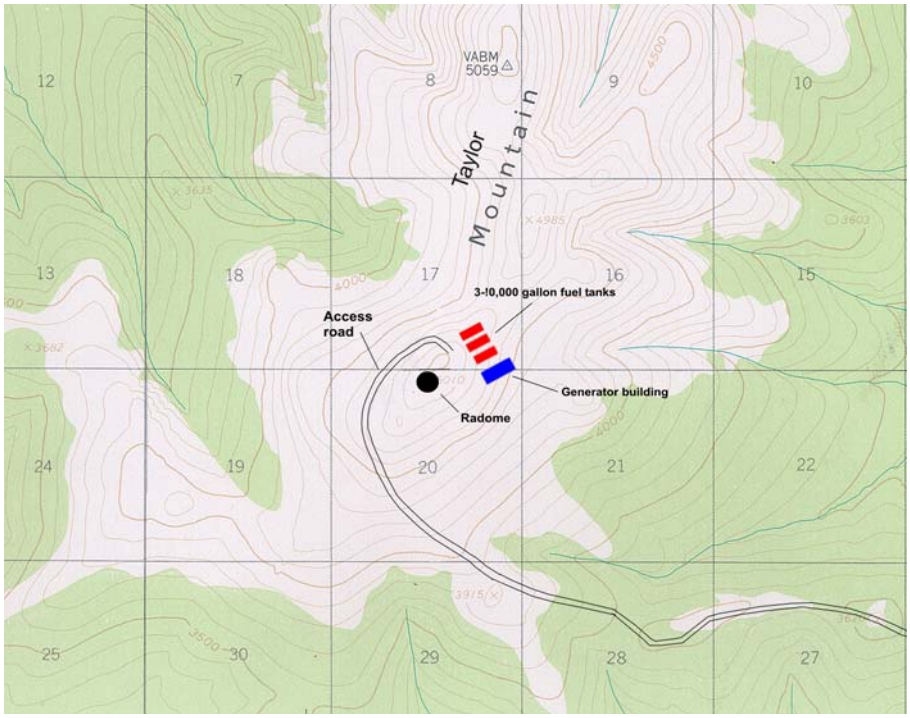

Figure 2 – Facilities Layout

2.1.5 An access road 7.9 miles in length and 21-foot-wide would be constructed following an existing unimproved trail starting at mile marker 57 of the Taylor Highway and terminating at the summit of Taylor Mountain. The road would be a semi-improved, gravel surfaced road that would be used primarily for construction and maintenance purposes for the radar facility. Approximately 48.7 acres of vegetation would be

disturbed with the construction of the access road. Segments of the road would traverse through wetlands resulting in impacts to approximately 3.57 acres of wetlands. Culverts would be installed as necessary to maintain natural flow of surface waters. Wetland segments along the proposed access road are shown in **Figure 3**.

Figure 3 – Proposed Road Route and Wetland Locations

2.2 Alternative 1 – Installation of a Radar System on Taylor Mountain with Fly-In Only Access

2.2.1 Under this alternative, the radome and associated components would be constructed similar to the proposed action with the exception of the access road. This site would be a fly-in only site and all equipment, material, and personnel would be ferried to the site via helicopters (CH-47 and Bell 212). During the construction period, a secured staging area would be set up for temporary storage of materials. The staging area would be located at 57 mile Taylor Highway. There would be no impact to wetlands under this alternative. Approximately 0.09 acres of vegetation and 26 cubic yards of upland soils would be disturbed with the installation of the radome and associated facilities under alternative 1.

2.2.2 Operation and maintenance of the facility would require approximately one site visit per month by helicopter for refueling generator fuel tanks, preventative maintenance, and repairs. A 400-square-foot helicopter pad would be leveled and cleared on the summit for construction and maintenance purposes.

2.3 Alternative 2 – Installation of a Radar System on Kechumstuk Mountain with Fly-In Only Access

2.3.1 Alternative 2 would result in installation of a TPS-77 radar facility on Kechumstuk Mountain located approximately 49 miles northeast of Tok, Alaska, 20 miles west of the Taylor Highway, and 60 miles west of the Alaskan/Canadian border (**Figure 1**). This site is undeveloped and would be accessed by helicopter similar to alternative 1. During the construction period, a secured staging area would be set up for temporary storage of materials located at 57 mile Taylor Highway. There would be no impact to wetlands with alternative 2. Approximately 0.09 acres of vegetation and 26 cubic yards of upland soils would be disturbed with the installation of the radome and associated facilities under alternative 2.

2.4 General Installation Requirements Common to Proposed Action, Alternative 1, and Alternative 2

2.4.1 Installation of the radar system would require the development of a 1-acre site. The actual footprint of facilities would require a total of 0.1 acres. The developed site would consist of five distinct areas with the following components:

- A transceiver area with LRR phased-array radar enclosed in a radome with an approximate footprint of 2,296 square feet;
- A 640-square-foot power generation area containing two 175-kilowatt (kW) diesel generators, three 10,000 gallon above ground double-walled fuel storage tanks, power distribution equipment, and a generator shelter; and
- One 10-foot by 10-foot antenna tower sites totaling 100 square feet.

In addition a 400-square-foot helicopter pad would be constructed for alternative 1 and alternative 2.

2.4.2 Installation of TPS-77 radar system would consist of five phases:

- Site survey and preparation
- System transport
- Site construction
- Integration of site communications
- System testing

Specific installation requirements for the action alternatives would vary due to differences in site location and available infrastructure. Site development and associated tasks required for implementation of action alternatives are presented in **Table 2**.

Table 2 – TPS-77 Radar Installation Tasks

Site Survey and Preparation

Proposed Action

- Construct 7.9 mile access road. Road width would be 15-foot-wide with 2:1 slopes, and surfaced with crushed rock for a total road width of 21 feet (including drainage ditches). Construction preparation would require hand and mechanical clearing of 12.5 acres of vegetation, installation of 17 culverts (12" – 36"), and placement of 11,600 cubic yards of gravel. Equipment would consist of bulldozers, graders, dump trucks, and rock crushers.

Alternative 1 and Alternative 2

- Level and clear a 400-square-foot helicopter pad.

Proposed Action, Alternative 1 and Alternative 2

- Level and prepare new radar site
- Install 32 steel pilings around the perimeter of the radome to support cantilevered radar platform. Steel pilings would be buried 20 feet below ground surface using a track drill. Pilings would be 4 inches in diameter and would be pressure grouted with concrete after installation.

System Transport

Proposed Action, Alternative 1, and Alternative 2

- Haul all equipment, materials, and system components via flatbed trucks from Eielson AFB to staging area located at 57 Mile Taylor Highway. Mobilization of equipment and materials would require approximately 14 trips using 40-foot tractor trailers.

Proposed Action

- Equipment and materials would be transported from staging area to Taylor Mountain via constructed 7.9 mile access road using flatbed trucks.

Alternative 1 and Alternative 2

- Transport equipment and materials from staging area to radar site using helicopters. This would require approximately 33 round trips using a CH-47 Chinook helicopter over ten days. A Bell 212 support helicopter would be required for transporting personnel during the estimated 16 weeks necessary for site prep, construction, integration, and system testing. Helicopter trips for transporting personnel would require approximately eight round trips daily between staging area and radar site.

Table 2 – TPS-77 Radar Installation Tasks

Site Construction
Proposed Action, Alternative 1, and Alternative 2 • Construct a 52-foot in diameter wood/steel platform over piling foundation to the support radome structure. • Install two 140-kilowatt diesel generators in generator shelter. Gensets would be equipped with 250-gallon day tanks and would be connected to three 10,000-gallon aboveground storage tanks with secondary containment capability. • Install electrical grounding system. Forty 4-inches in diameter holes would be drilled in a grid pattern to a depth of 20 feet for the installation of the grounding rods. Holes would be drilled using a track type drill rig and would be located in upland soils. Metal rods would be placed in holes and backfilled with a Ground Enhancing Material (GEM) such as bentonite or conductive cement. The grounding rods would be connected together with a common ground wire with direct burial that would extend to the radar system. • Install a 30-foot microwave tower on a 10-foot by 10-foot concrete constructed pad. • Construct a 52-foot diameter by 70-foot-high radome to house radar components. • Install TPS-77 radar in radome.
Integration of Site Communications
Proposed Action, Alternative 1, and Alternative 2 • Integrate each component, including the phased-array radar, communications equipment, and power distribution into a functioning system. • Establish a microwave data-link from Taylor Mountain to the SR-1 and Donnelly Dome radar sites.
System Testing
Proposed Action, Alternative 1, and Alternative 2 • Perform system baseline testing to ensure correct system operation, validate radar coverage, and commission the system for FAA certified air traffic control. This would be done by the 84th Radar Evaluation Squadron. The new radar system would be checked using both on-site inspections and evaluation flights. Evaluation flights would be accomplished using a rented commercial aircraft. Both low altitude (1,000 feet AGL) and high altitude (35,000 feet mean sea level) flights would be conducted within a 200 nautical mile distance of radar facility. Approximately 25 flying hours would be required to perform system testing.

2.5 No Action Alternative

Under the no action alternative, existing long-range radar coverage would not be expanded and there would be no alterations or additions to existing USAF radar facilities.

2.6 Other Alternatives Considered

Two additional sites were considered for installation of a radar system, but were rejected due to site considerations. Placement of a radar installation in Tok was considered, but rejected due to poor ground-to-air radio coverage caused by its lower elevation. A radar site located on the summit of Glacier Mountain was also considered, but rejected for accessibility and economic reasons. Glacier Mountain is located approximately 106 miles northeast of Tok with no economical means of establishing the necessary data-link to the existing microwave network.

3.0 Affected Environment

Chapter 3 describes the existing environment and resource components that would be impacted by the proposed project and the alternatives. The resources discussed in this section are presented as a baseline for comparisons of environmental consequences. Unless otherwise specified, resource descriptions in Chapter 3 are regional descriptions that encompass the proposed action and all alternative actions. Resources discussed in the section are as follows:

- Physical Resources, which includes general site location, topography, geology, soils and permafrost, climate and air quality, ground and surface water, wetlands, and infrastructure improvements.
- Biological Resources, which includes vegetation, wildlife, fish, and threatened or endangered species.
- Cultural Resources including Archeological or Historical Resources.
- Recreational Resources
- Socioeconomic Factors

3.1 Physical Resources

3.1.1 General Site Location

3.1.1.1 The proposed action, alternative 1, and alternative 2 are located within the Fortymile region of Interior Alaska (**Figure 1**). Site specific locations are detailed in Sections 1.2 and 1.3.

3.1.2 Topography

3.1.2.1 The proposed action, alternative 1, and alternative 2 lie within the central portion of the Upper Yukon-Canada physiographic province. This region includes portions of the White, Fortymile, and Laude river drainages within Alaska and covers about 9,000 square miles. Rounded ridges and gentle slopes characterize the topography of this section. In the western part these rounded ridges trend northeast to east with ridge crest altitudes of 1,500 to 3,000 feet and rise 500 to 1,500 feet above adjacent valley floors. Valleys in the western part are generally flat, alluvium-floored, and a quarter mile to one mile wide to within a few miles of the headwaters. Ridges in the eastern part have no preferred direction and range from 3,000 feet to 5,000 feet in altitude, but have some domes as high as 6,800 feet, and rise 1,500 to 3,000 feet above adjacent valleys. In the extreme northeast the ridges are very rugged. Streams in the eastern part that drain to the Yukon River flow in narrow, V-shaped terraced canyons, while the headwaters of the Fortymile and Laude Rivers are broad, alluvium-floored basins. The major topographical features of the sites for the proposed action, alternative 1, and alternative 2 are listed in **Table 3**.

Table 3 – Topographical Features of Alternative Sites

Action	Site Location	Elevation (Feet)	Nearby Drainages
Proposed Action/ Alternative 1	Taylor Mountain	5,040	Bullion Creek, Mosquito Fork of Fortymile River, and tributaries to Dennison Fork of Fortymile River
Alternative 2	Kechumstuk Mountain	5,002	Kechumstuk Creek and Mosquito Fork of Fortymile River

3.1.3 Geology, Soils, and Permafrost

3.1.3.1 The central portion of the Upper Yukon-Canada physiographic province is geologically complex and includes the Tintina fault zone. Thrust faults cut a sequence of highly deformed Paleozoic sedimentary and volcanic rocks containing limestone. Serpentine ultramafic rocks and a wide variety of other igneous rocks also occur throughout the area. South of the Tintina fault zone fairly high grade metamorphic rocks are intruded by Mesozoic and Tertiary granitic rocks. In the western portion of the region large areas are covered by volcanic rocks of Tertiary and Quaternary age. Coal-bearing rocks containing subbituminous coal can be found in the northeast part of the region. A coal deposit at Chicken on the South Fork of the Fortymile River contains a subbituminous coal seam 22 feet in width. Unconsolidated deposits accumulated during the Pleistocene period are concentrated in the river valleys and lowlands. Fortymile Mining District has known occurrences of gold, iron, titanium, barium, garnet, tin, mercury, tungsten, thorium, silver, lead, copper, zinc, and antimony.

3.1.3.2 The surface of Taylor Mountain consists of rubble boulders up to 3 feet in diameter (**Photograph 2**). Drill log samples collected from Taylor Mountain indicate that a moderately weathered granodiorite extends to 10 feet below ground surface followed by granodiorite bedrock. Regional geology maps indicate that Kechumstuk Mountain has the similar lithology.

3.1.3.3 Soils in the region are mantled with loamy soils of variable texture. Wet loams with thick surface organic mats occupy lowland areas along rivers. Soils in the Mosquito Flats of the Fortymile basin consist of poorly drained loamy soils with a thick surface layer of peat. Other poorly drained soils occupy lower slopes adjacent to valley bottoms in the Tanana Valley and lowlands of the Fortymile area. Soil texture becomes more gravelly at higher elevations. Soils found at the peaks of summits are characteristically

Photograph 2 – Taylor Mountain Rubble

well drained shallow silt loam overlying very gravelly loam. Soil cover on the summit of Kechumstuk Mountain is estimated to be fairly uniform, well drained gravelly silt loam less than 2 inches in depth. Drill logs indicate that soils on the summit of Taylor Mountain (proposed action and alternative 1) consist of a 1 to 2-inch mineralized soil horizon in small isolated pockets, followed by a moderately weathered rubble to a depth of 10 feet, followed by bedrock. Soils along the existing trail (proposed access roadway) from the Taylor Highway to the summit of Taylor Mountain consist primarily of silt and silty gravels. Soils found in creek beds and low-lying areas contain thick surface organic mats.

3.1.3.4 The extent and thickness of permanently frozen ground in the region varies from thick, continuous permafrost in the northeastern part of the region to moderately thin, discontinuous permafrost in the southern portion of the region. Permafrost is found in the lowlands and steep upper north-facing slopes in the highlands within the Fortymile River drainage. Slopes with a southern exposure in the highlands are occupied by well-drained gravelly loams without permafrost. Variations in terrain, vegetation, and climate can affect the presence and thickness of permafrost.

3.1.4 Climate and Air Quality

3.1.4.1 From the Canadian border west to the area surrounding the proposed project, the Upper-Yukon physiographic province is classified as having a continental subarctic climate. This is characterized by a wide range of extreme temperatures changes from summer to winter, large mean annual diurnal temperature changes, and extreme seasonal contrasts in sunlight duration. The region typically has clear skies and cold temperatures (lows of -60^{o} F, highs of +40^{o} F) in winter and hot (lows of +30^{o} F, highs of +90^{o} F), dry summers. This results in a low relative humidity and a high evaporation rate of surface

waters and a high sublimation rate of ice and snow. Annual precipitation averages slightly more than 12 inches. Northwest winds prevail in the Taylor Mountain region year-round, channeled along the direction of the Tanana River Valley. The frost-free period is generally from the third week in May until the end of August.

3.1.4.2 The alternative project sites fall outside the boundaries of any Air Quality Control Region. Existing conditions in the area are assumed to be in attainment with National Ambient Air Quality Standards. Naturally occurring airborne loess is common along the Tanana River valley located approximately 44 miles southwest of Taylor Mountain.

3.1.5 Noise

3.1.5.1 Proposed Action, Alternative 1, and Alternative 2

Due to the remoteness of the area, the only noise source is from periodic over flights of military and civilian aircraft.

3.1.6 Ground and Surface Water

3.1.6.1 Potential groundwater supply is greatest in the floodplain alluvium along riverbeds and drainages throughout the region. Detailed groundwater data for the region is not available. The major source of groundwater recharge for aquifers is from influent seepage of glacier-fed streams and snowmelt.

3.1.6.2 Lakes in the region are mainly thaw lakes located in valley floors, marshlands, and low mountain passes. The entire section is in the Yukon River drainage basin with streams flowing south to the Tanana River and north to the Yukon River. Most streams in the area freeze solid during the winter months and reach their peak flows during June and July. The Fortymile River and White River are tributaries to the Yukon River and have drainage of 6,562 and 18,500 square miles respectfully. The White River drains the southern portion and is 75 miles in length while the Fortymile River is 56 miles in length and drains the northern portion of the region. The South Fork, Mosquito Fork and West Dennison Fork of the Fortymile River are designated are Wild and Scenic Rivers. The proximity of Wild and Scenic Rivers to sites under consideration is shown in **Table 4**.

Table 4 – Proximity of Wild and Scenic Rivers

Site	National Wild and Scenic Rivers	Distance
Proposed Action, Alternative 1-Taylor Mountain	Mosquito Fork of Fortymile River West Dennison Fork Fortymile River	5 miles W. 5 miles E.
Alternative 2-Kechumstuk Mountain	Mosquito Fork of Fortymile River	3.5 miles S.E.

3.1.6.3 The proposed access road traverses an unnamed tributary of the Dennison Fork (**Photograph 3**) of the Fortymile River and is identified as Wetland Segment 2 as shown in **Figure 3**. The main channel of the tributary at the proposed road crossing was observed to be approximately four feet in width and one-foot in depth at the time of the site visit (August, 2004).

Photograph 3 – Unnamed Tributary

3.1.7 Wetlands

Wetlands are a predominant physical feature found within the Upper Yukon–Canada region. The presence of extensive areas of permafrost has created perched water conditions in many areas, resulting in seasonally persistent moist or saturated soil conditions.

3.1.7.1 Proposed Action

An access road 7.9 miles in length would be constructed under the proposed action. Segments of the proposed road would traverse through wetlands and would disturb approximately 1.51 acres of wetlands (**Photograph 4**). Wetlands were identified as scrub/shrub and black spruce woodland type plant communities. Wetland segments along the proposed access road are shown in **Figure 3**.

3.1.7.2 Alternative 1 and Alternative 2

Alternate 1 and alternative 2 are located in uplands. Wetlands may, however, be present in the surrounding valley floors.

Photograph 4 – Wetlands Along the Proposed Access Road

3.1.8 Infrastructure Improvements

3.1.8.1 Proposed Action and Alternative 1

There are no facilities or improvements located on Taylor Mountain. The closest road access is the Taylor Highway located approximately 6.5 miles to the east. The Taylor highway is a combination improved/semi-improved road 160 miles in length that connects Tetlin Junction on the Alaska-Canadian Highway to the village of Eagle. There is however, an existing unimproved trail starting at mile marker 57 of the Taylor Highway and terminates at the base of Taylor Mountain.

3.1.8.2 Alternative 2

There are no facilities or improvements located on Kechumstuk Mountain. The site is considered a fly-in only site with no access or trail improvements to the summit. The closest road access is the Taylor Highway located approximately 20 miles east of Kechumstuk Mountain.

3.2 Biological Resources

3.2.1 Vegetation

3.2.1.1 The Upper Yukon-Canada region supports a variety of plant communities. Due to the variations in the surrounding terrain, the plant communities vary in relation to slope orientation, changes in elevation, and fire history. Changes in vegetation are also influenced by spatial differences in soil temperature, moisture content, soil fertility, and

presence of permafrost. The major plant community types include upland mixed spruce/broadleaf forests; white and black spruce coniferous forests; herbaceous wetlands and alpine tundra plant communities.

3.2.1.2 Upland mixed spruce-broadleaf forest tends to occur on well-drained sites with little permafrost. This forest type is commonly found on south-facing slopes. Tree species include white spruce, paper birch, quaking aspen, and balsam poplar. Willows, alder, wild rose, blueberry, and high-bush cranberry are common shrubs. Ridge tops with higher elevations usually consist of a tall shrub community characterized by dwarf birch and herbaceous species with widely scattered black spruce.

3.2.1.3 White and black spruce coniferous forests are common throughout interior Alaska. White spruce can be found on well-drained upland and flood plain sites, especially where permafrost is lacking, and on low elevation slopes with south, west, or east aspects. Black spruce forest tends to occur on poorly drained sites underlain by permafrost. Black spruce forest is common in low-lying areas, drainage basins, and north-facing slopes. Black spruce occurs in closed canopy stands and as scrubby open stands of dwarf trees. Other species commonly occurring in white and black spruce forest type include tamarack, blueberry, low-bush cranberry, Labrador tea, and feather moss.

3.2.1.4 Herbaceous wetland plant communities occur in poorly drained soils and are typically found where permafrost is present. Low growing shrubs such as willow and bog blueberry may be present, while some herbaceous wetlands consist primarily of graminoids and sedges.

3.2.1.5 Alpine tundra includes barren lands and is usually found on mountains, ridges, dry river terraces, alluvial fans, or on rubble slopes where bedrock is close to the surface. Characteristic shrubs include resin birch, dwarf arctic birch, crowberry, Labrador-tea, and mountain heath. Herbs present may consist of mountain avens, dryas, lousewort, and fleabane. Graminoids such as bluejoint, Siberian fescue, and sweetgrass may be found along with lichens and mosses.

3.2.1.6 During the summer of 2004 about 75 percent of the area was heavily burned as a result of wildfires. Many areas were burned down to the mineral soils and the character of the vegetation in succeeding years will reflect the vegetation patterns that occur after a wildfire.

3.2.1.1 Proposed Action and Alternative 1

3.2.1.1.1 Vegetation on the summit of Taylor Mountain is sparse with less than 10 percent of the summit covered with vegetation. Vegetation consists of small isolated patches of graminoids, herbs, and lichens.

3.2.1.1.2 Tree species found in the upland sites in the surrounding valley floor consist primarily of white and black spruce, paper birch, and balsam poplar (**Photograph 5**).

Shrubs consist of alder,willow, wild rose, and high bush cranberry. Vegetation found in wetland sites consist primarily of black spruce, willow, blueberry, dwarf arctic birch, and sedges.

Photograph 5 – Upland Vegetation Along the Proposed Access Road

3.2.1.2 Alternative 2

The summit of Kechumstuk Mountain is classified as dry alpine tundra and is approximately 10 percent vegetated with the remainder of the area covered with fractured bedrock. Vegetation consists of various graminoids, herbs, and lichens.

3.2.2 Wildlife

3.2.2.1 Large mammals that are likely to be found in nearby habitat include moose, caribou, grizzly bear, and black bear. The moose population in the area is low, about 0.5 moose per square mile compared to the moose densities around Fairbanks and Anchorage, which are about 2 to 3 per square mile. The Fortymile caribou herd utilizes the surrounding area as its principle winter range. Since 1995, the Fortymile caribou herd has increased from a population of 22,000 to almost 40,000. The Fortymile caribou herd once numbered nearly 500,000 caribou and ranged across eastern interior Alaska and the Yukon Territory. Periodic hard winters coupled with over harvest and high predation rates drove the herd to less than 7500 animals by the early 1970s. It is currently about 5 per cent of its former size and occupies about 25 per cent of its former range, mostly in Alaska. Its range lies in portions of four game management subunits (20B, 20D, 20E, 25C).

3.2.2.2 Dall sheep can be found in the Nutzotin Mountains to the south and the Glacier Mountain area to the north. Other mammals present include wolves, coyote, fox, lynx, arctic snowshoe hare, red squirrel, marten, beaver, mink, and short-tailed weasel.

3.2.2.3 The Upper Tanana River valley located approximately 44 miles southwest of Taylor Mountain is a primary migration corridor for Canadian geese, swans, cranes and ducks each spring and fall. Other migratory birds common to interior Alaska including gulls, swallows, thrushes, sparrows, and warblers, can be found in the area. Waterfowl habitat in the Fortymile area is sparse except on the Mosquito Fork of the Fortymile. Marshes associated with this area are used by nesting waterfowl such as mallards, pintails, widgeon, green-winged teal, and buffleheads. Non-migratory birds include ravens, jays, chickadees, woodpeckers, grouse, and ptarmigan. Raptors include bald and golden eagles, hawks, kestrels, owls, and gyrfalcons (usually above 2,500 feet in elevation).

3.2.3 Fish

Fish found in major river drainages include grayling, sheefish, northern pike, and whitefish. Lakes in the vicinity are primarily thaw lakes and are too shallow and oxygen deficient to support fish on a year-round basis.

3.2.3.1 Proposed Action

The proposed access road traverses an unnamed tributary of the Dennison Fork of the Fortymile River. According to Alaska Department of Fish and Game, the tributary contains grayling.

3.2.4 Threatened or Endangered Species

3.2.4.1 According to U.S. Fish and Wildlife Service (USFWS), there are no known threatened or endangered species within the region or the proposed project area. However, the proposed project site is within the range of the American peregrine falcon (*Falco peregrinus anatum*), which was removed from the list of threatened and endangered species in 1999. Peregrine falcons are an infrequent migrant to the area.

3.2.4.2 Due to its recent recovery from endangered status, the USFWS will monitor the American peregrine falcon on a regular basis for the next decade. If survey data indicate a reversal in recovery, the American peregrine falcon could be emergency listed at any time. Therefore, the USFWS recommends agencies avoid impacts to peregrine falcons to assure a healthy long-term population.

3.2.4.3 No federal or state listed threatened or endangered plant species have been listed as occurring within the region.

3.3 Cultural Resources

3.3.1 Archeological and Historical Resources

3.3.1.1 Proposed Action and Alternative 1

Based on the results of an archeological and cultural resource survey completed by Northern Land Use Research Inc., no cultural or archeological evidence was found during the site survey.

3.3.1.2 Alternative 2

An archeological and cultural survey was not completed for Kechumstuk Mountain. A Section 106 consultation would need to be completed with the selection of this alternative.

3.3.1.3 Historical Resources Common to all Alternatives

Chicken Alaska is located at 66 mile on the Taylor Highway and is listed on the Alaska Register of Historic places. Historical remains related to the discovery of gold in the Fortymile area during the 1880's are present in the area. Chicken is located approximately 11.5 miles east of Taylor Mountain.

3.4 Recreational Resources

Although there is no data on the number of people who use lands in the surrounding area for outdoor recreation, it is clear that the most popular forms of recreation include canoeing, rafting, hiking, wildlife viewing, photography, snowmobile use, recreational placer gold mining, hunting, trapping, and fishing. Recreational hunting of big game species includes moose, caribou, and bear. Hunting of small game includes arctic snowshoe hare, grouse, and ptarmigan.

3.5 Socioeconomic Factors

The proposed radar and communications installation is not located near any population centers that are disproportionately inhabited by minorities or low-income groups. Few population centers exist within the region. The largest community, Tok, located approximately 54 miles southwest of Taylor Mountain, has a population of 1,400. Chicken, located approximately 11.5 miles east of Taylor Mountain, has a summer population of 140.

4.0 Environmental Consequences

Chapter 4 is organized by resources with the environmental consequences evaluated for each alternative. This discussion provides a scientific and analytic basis for the comparisons of the alternatives and describes the probable consequences (impacts and effects) of each alternative on selected environmental resources. The effects of each alternative upon each resource are discussed in the same order that they were presented in Chapter 3, beginning with the proposed action. Impacts that are common to all alternatives are stated as such and are addressed in the appropriate sections.

4.1 Physical Resources

4.1.1 Geology, Soils, and Permafrost

4.1.1.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

4.1.1.1.1 The primary disturbance to soils would result from the installation of the grounding system, drilling for radome foundation support, and leveling required for placement of fuel tanks, microwave tower pad, and generator shelter.

4.1.1.1.2 The grounding requirements for the electrical system would require the drilling and installation of approximately 40 grounding rods and direct burial of 200 feet of grounding cable in upland soils. The grounding system would result in the disturbance of a total of 8 cubic yards of upland soils due to drilling and excavation.

4.1.1.1.3 Foundation support for the radome would include placement of steel micropiles around the perimeter and construction of an elevated platform to support a 52-foot diameter radome. Approximately 18 cubic yards of upland soils would be disturbed with the drilling and installation of steel pilings.

4.1.1.1.4 A total of approximately 26 cubic yards of upland soils would be disturbed by these actions. Disturbance to existing soil and vegetation during construction has the potential to result in erosion.

4.1.1.1.5 Depending on the area selected for a staging area, compaction of soils could occur due to operation of heavy equipment and storage of materials. However, the effect would be minimal.

4.1.1.2 Proposed Action

Extensive disturbance to soils would result from leveling of existing terrain for construction of an access road to the proposed radar facility site. This construction effort would include placement of approximately 4,200 cubic yards of gravel fill in wetland areas to construct a stable road surface. In addition, other portions of the road route will have soils disturbed by cutting and filling of native material to create a drivable road

surface. Some of these areas may require additional gravel fill if native soils are not stable enough to support vehicle traffic.

4.1.1.3 Alternative 1 and Alternative 2

Leveling required for the construction of a 400-square-foot helicopter pad would result in disturbance to soils at the summit of the mountains. Soils on the summit consist primarily of rocky rubble.

4.1.1.4 No Action Alternative

There would be no disturbance to the soils under this alternative.

4.1.2 Climate and Air Quality

4.1.2.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

4.1.2.1.1 Air quality may be temporarily diminished during construction due to emissions produced by construction equipment. Airborne particulate matter in the form of dust emissions may also increase if the construction occurs during dry summer months.

4.1.2.1.2 The proposed installation of a radar site would be powered by a constant-run diesel generator. The overall air quality in the immediate vicinity of the selected site would be slightly diminished due to emissions caused by the diesel generator. However, these mountain summits are exposed high points and wind would prevent this from occurring except in rare circumstances.

4.1.2.2 No Action Alternative

There would be no changes to the existing air quality under this alternative.

4.1.3 Noise

4.1.3.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

A radar installation would require diesel generator to power the facility which would result in increased noise levels in the immediate vicinity. However, this would be minimized with the installation of a muffler system and generator shelter which would also reduce the noise level. There would also be a temporary increase in noise levels in the surrounding area during the construction period which is anticipated to last three months.

4.1.3.2 Alternative 1 and Alternative 2

Under these two alternatives the facilities would be fly-in only sites and would result in the additional increase in noise levels during the construction period and also on an

ongoing basis for maintenance and fuel delivery to Taylor Mountain or Kechumstuk Mountain. Installation of a radar site would result in approximately ten helicopter flights per day for ten days to deliver equipment, materials, and personnel. Construction of the radar site would require an additional six trips per day for 16 weeks to transport contractors and AF personnel. After installation of the radar site, bi-weekly site visits by helicopter for refueling generator fuel tanks, preventative maintenance, and repairs would be required.

4.1.4 Ground and Surface Water

4.1.4.1 Impacts Common to Proposed Action, Alternative 1 and Alternative 2

Selection of the proposed action or one of the alternative actions would require the regular delivery and transfer of fuel to power the generators. The potential for a hazardous material release effecting ground or surface waters would be greater with the selection of one of the action alternatives should a spill or malfunction occur during fuel delivery or fuel transfer. Spill equipment would be stored on-site and an immediate response would occur in the event of a spill or release.

4.1.4.2 Proposed Action

Construction of the proposed 7.9 mile access road could result in minor changes to surface runoff patterns. Appropriately sized culverts would be installed where necessary to minimize alteration of drainage patterns. There would likely be no impact to groundwater under the proposed action. In the event there appeared to be insufficient drainage structures, additional culverts would be installed

4.1.4.3 Alternative 1 and Alternative 2

Other than minor changes to surface runoff patterns, there would likely be no direct impacts to ground or surface waters with the implementation of alternative 1 or alternative 2.

4.1.4.4 No Action Alternative

There would be no impact to ground or surface waters with the selection of the no action alternative.

4.1.5 Wetlands

4.1.5.1 Proposed Action

Segments of the proposed access road would traverse through wetlands disturbing approximately 3.57 acres of wetlands. Wetlands located in the area are low to moderate value wetlands consisting of scrub/shrub and Black Spruce Bog woodland plant communities.

Impact to wetlands however would be minimized by installation of adequate culverting to prevent alteration of drainage patterns.

4.1.5.2 Impacts Common to Alternative 1, Alternative 2, and No Action Alternative

There would be no impact to wetlands with these alternatives.

4.1.6 Infrastructure Improvements

4.1.6.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

4.1.6.1.1 The proposed TPS-77 radar installation would meet the USAF objectives and requirements for long-range radar coverage of the airspace over and surrounding the Fort Greely National Missile Defense System and provide the USAF the ability to monitor the low altitude airspace within the Northway Corridor. The radar system would provide additional safety for military and civilian aircraft operating in the covered area and also allow the USAF to expand the functional area within the Pacific Alaska Range Complex that is available for training and exercises.

4.1.6.1.2 The installation of larger structures such as a radome, antennas, and equipment shelters could impact the scenic quality of the area and diminish the aesthetics of the surrounding area to recreational users.

4.1.6.2 Proposed Action

The proposed access road would provide a long-term economic benefit to the USAF by minimizing fuel delivery and maintenance costs. It is projected that recreational use of the area would also increase due to ease of access. In addition, the access road would provide much -needed access to privately owned land that will be up for disposal by the state.

4.1.6.3 Alternative 1 and Alternative 2

This would result in a fly-in only radar installation site. The initial cost to implement would be less than the proposed action; however, long term maintenance costs would be greater.

4.1.6.4 No Action Alternative

This alternative would have no additional direct costs. However, this alternative would not provide the required long-range radar coverage of the airspace over and surrounding the Fort Greely National Missile Defense site or the mandated Special Use Airspace Information Service as mandated through the Alaska Military Operations Areas Environmental Impact Statement which establishes Pacific Alaska Range Complex airspace. Use of airspace by military and civilian aircraft would continue to pose a safety hazard due to lack of adequate radar and radio coverage and would limit future USAF

training opportunities in the eastern portion of the Pacific Alaska Range Complex airspace.

4.2 Biological Resources

4.2.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

4.2.1.1 A radar and communications facility would contain equipment such as transmitters and microwaves which are known to emit radio frequency radiation (RFR). Studies have shown that exposure exceeding maximum exposure limits is a health hazard and has been linked to increased cancer incidence and can have hematological and neurological effects on humans.

4.2.1.2 An analysis of the potential electromagnetic radiation hazards associated with the operation of the proposed TPS-77 radar system at both Taylor Mountain and Kechumstuk Mountain has resulted in the establishment of maximum permissible exposure (MPE) limits for a controlled and uncontrolled environment based on the frequency of the device. An uncontrolled environment equates to a worse-case operating environment. Based on this, in comparing the limit to the average near-field power densities, as calculated herein, hazards to personnel will not exist. The minimum safe distances from the radar are given in **Table 5**. Based on this analysis, it is anticipated that the radar facility would not result in unsafe radiation exposure to humans, wildlife, or fuels stored at the facility.

Table 5

Area of Concern	Minimum Safe Distance (meters)
Personnel-Controlled Environment	0.00
Personnel-Uncontrolled Environment	0.00
Personnel with Cardiac Pacemakers	102.01
Wildlife	0.00
Fuels	0.00

4.2.2 No Action Alternative

A radar and communications site would not be installed and would not result in potential RFR hazards.

4.2.3 Vegetation

4.2.3.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

Vegetation on the summits of Taylor Mountain and Kechumstuk is classified as dry alpine tundra with an estimated 10 percent vegetation cover consisting of various graminoids, herbs, and lichens. Approximately 0.08 acres of vegetation would be lost with the installation of a radar and communications facility.

4.2.3.2 Proposed Action

An additional 47.8 acres of vegetation would be lost with the construction of the proposed 7.9 mile access road. Vegetation in the project site is typical of that found in an Interior Alaska deciduous mixed forest. Due to the abundance of similar vegetation types found throughout the area, the loss of vegetation would be minimal. Approximately 3.57 acres of wetland vegetation consisting primarily of scrub/shrub and black spruce would also be lost with the construction of the access road. Much of the vegetation in the project area was burned during wildfires that occurred in the summer of 2004. The vegetation that is typically associated with a deciduous forest would not be present for 15 to 20 years. The vegetation that would be lost would be mostly early stage succession from a burned over area, including grasses and invasive forbs and shrubs.

4.2.3.3 No Action Alternative

There would be no loss of vegetation with this alternative.

4.2.4 Wildlife

4.2.4.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

4.2.4.1.1 Mountain summits are used sporadically by wildlife in the area. Due to lack of adequate forage and other food sources, most species would only occupy these areas on a transitory basis. Due to the minimal site disturbance and the availability of large areas of similar habitat nearby, no direct impacts to wildlife are anticipated with the proposed installation of a radar site.

4.2.4.1.2 Possible impact to birds could occur with proposed installation of a radar site. Bird collisions with communication towers may result in avian mortality. Violations of the Migratory Bird Treaty Act or the Endangered Species Act, or both, could result if fatalities occurred to protected species. U.S. Fish and Wildlife Service have presented evidence that higher mortality rates occur at towers greater than 200 feet aboveground and at towers that are lit with navigational warning lights. The tower used in the action alternatives would be less than 200 feet and would not have navigational warning lights.

4.2.4.2 Alternative 1 and Alternative 2

Alteration of migration patterns for a species such as caribou is not expected to occur. However, development of a radar site on Taylor Mountain and Kechumstuk Mountain would require multiple helicopter trips to transport equipment and personnel and could result in temporary disruptions to wildlife movement as is typically found during the construction phase of projects.

4.2.4.3 No Action Alternative

Implementation of this alternative would not result in any loss of wildlife habitat. No changes in wildlife habitat or movement would be expected under this alternative.

4.2.5 Fish

4.2.5.1 Proposed Action

The proposed access road traverses an unnamed tributary of the Dennison Fork of the Fortymile River which according to Alaska Department of Natural Resources, Division of Habitat and Permitting, contains grayling. Increased stream sedimentation could occur during construction which could have the potential to impact fish habitat, however, silt fencing would be used during construction near the tributary to minimize the potential for sedimentation and erosion. An adequately sized culvert would also be placed in the stream channel to allow for natural flow of water and fish passage. In addition to stream culverts, other culverts will be installed in the adjoining floodplain of this unnamed creek to handle sheet flow during spring thaw when stream culverts may contain ice blockage.

4.2.5.2 Alternative 1 and Alternative 2

Implementation of these two alternatives would have no impact on fish habitat. The potential for increased stream sedimentation due to construction activities is low because no fish streams are located in close proximity to the summit areas.

4.2.6 Threatened or Endangered Species

4.2.6.1 Impacts Common to all Alternatives

No known threatened or endangered species inhabit the area and, therefore, these species would not be impacted by the selection of the proposed action, alternative 1, alternative 2, or the no action alternative. According to the USFWS, there are no identified sensitive nesting habitat sites within the vicinity of the proposed action site or alternative sites.

4.3 Cultural and Historical Resources

4.3.1 Proposed Action and Alternative 1

4.3.1.1 Based on the results of an archeological and cultural resource survey completed by Northern Land Use Research Inc., no foreseeable impact to cultural resources is

anticipated by the proposed undertaking of the construction of the proposed radar/communications site and access road. If during construction there is any finding of archeological evidence, a qualified archeologist would evaluate the site prior to any further disturbance and notify the State Historic Preservation Office of their findings.

4.3.1.2 Chicken, Alaska, is listed on the Alaska Register of Historic places and is located approximately 11.5 miles east of Taylor Mountain. There would be no anticipated impacts to historical resources.

4.3.2 Alternative 2

If alternative 2 were selected as the action alternative, a 106 Consultation would be necessary prior to commencement of construction activities.

4.4 Recreational Resources

4.4.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

Data such as harvest reports indicate that frequency and numbers of recreational users for the area are not available. It is anticipated that recreational use of the area is highest during summer and fall months. Implementation of the proposed action, alternative 1, or alternative 2 would result in construction of structures that may diminish the scenic quality.

4.4.2 Proposed Action

It is projected that recreational use of the area would increase due to the construction of the facility access road.

4.4.3 No Action Alternative

The selection of the no action alternative would have no impact on the existing recreational resources.

4.5 Socioeconomic Factors

The project areas selected for action alternatives are unpopulated. Installation of a radar site may result in short-term economic benefits during the construction phase for some local suppliers, food service, and lodging businesses.

4.6 Environmental Justice

Environmental justice, as it pertains to the NEPA process, requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. To accomplish these requirements, the Air Force must conduct an

environmental justice analysis of all potential impacts that may result from the proposed actions. Based on the environmental impacts identified in this EA and on a corresponding environmental justice analysis, it is felt that no disproportionate impact to minority or low-income populations would occur from implementation of this project.

4.7 Cumulative Impacts

4.7.1 Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Individual actions may result in minor impacts but collectively may result in significant actions taking place over a period of time.

4.7.2 Cumulative impacts to wetlands may result from repetitive actions involving training, maintenance, and operation of facilities within the wetland areas. Disturbance to the wetlands in permafrost areas can lead to a variety of negative consequences such as loss of wetlands vegetation, increases in permafrost subsidence, increases in erosion, losses of the natural filtering mechanism which wetlands provides, and other impacts.

4.7.3 Negative impacts to wetlands associated with military activities have been minimized through compliance with regulations controlling military activity in wetland areas. According to U.S. Army Corps of Engineers, a total of 0.0132 percent of the withdrawl lands have been disturbed since 1989 (*Alaska Army Lands Withdrawal Renewal. Final Legislative Environmental Impact Statement, 1998,* Volume 1). The additional loss of 3.57 acres of wetlands from this project would not result in significant cumulative impacts to lands used for military purposes in the state of Alaska.

4.8 Unavoidable Adverse Impacts

The unavoidable impacts for the proposed action, alternative 1, alternative 2, and the no action alternative are in tabular form (**Table 6**) for ease of comparison.

Table 6
Summary of Unavoidable Adverse Impact

Action	Unavoidable Adverse Impact
Proposed Action	• Loss of 3.57 acres of wetlands and wetland vegetation for construction of access road. • Loss of 48.7 acres of mostly previously burned vegetation for construction of access road and installation of radar facility. • Disturbance of 26 cubic yards of upland soils. • Diminished scenic quality in the area due to radar installation. • Diminished air quality and increased noise level in immediate vicinity of facility due to operation of diesel generators.
Alternative 1 and Alternative 2	• Loss of 0.08 acres of upland vegetation for installation of radar facility. • Disturbance of 26 cubic yards of upland soils. • Diminished scenic quality in the area due to radar installation. • Diminished air quality and increased noise level in immediate vicinity of facility due to operation of diesel generators. • Periodic increase in noise level due to refueling operations with helicopters.
No Action Alternative	• Lack of required long-range radar coverage of the airspace over and surrounding the Fort Greely National Missile Defense System or the mandated Special Use Airspace Information Service. • Use of airspace by military and civilian aircraft would continue to pose a safety hazard due to lack of adequate radar and radio coverage and would limit future USAF training opportunities in the eastern portion of the Pacific Alaska Range Complex airspace.

4.9 Relationship of Short-Term Uses and Long-Term Productivity

4.9.1 Impacts Common to Proposed Action, Alternative 1, and Alternative 2

The short-term uses and benefits with these alternatives is that by installing the radar and communications site, the USAF would achieve mandated objectives for increased radar coverage. Safety for military and private aircraft would also be enhanced. Long-term productivity resulting from loss of wetlands and vegetation would be minimal.

4.10 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term. Irretrievable commitments are those that are lost for a period of time. The only irreversible commitment of resources associated with the action alternatives is the loss of 3.57 acres of wetlands. Irretrievable commitments may result from the loss of existing vegetation, from alterations of scenic values, and disturbance impacts to wildlife such as caribou.

4.11 Mitigation

The design aspects for the proposed installation of a radar and communications site would incorporate best management practices that are designed to mitigate impacts to the environment as discussed in Chapters 2 and 4. Design aspects include the following:

- Measures designed to prevent alteration of drainage patterns and impacts to wetlands;
- Measures to prevent erosion and sedimentation;
- Measures to ensure fish passage; and
- Measures designed to minimize impacts from transport, handling and storage of fuel.

5.0 List of Preparers

5.1 Writers

5.1.1 Lyle D. Gresehover wrote most sections of this EA. Lyle has a BS in Geology and 14 years of experience in environmental science and natural resource management.

5.1.2 James Nolke wrote selected portions of the EA and reviewed and edited all portions of the EA.

5.2 List of Agencies and Persons Consulted

Person	Agency	Information
James Nolke	USAF, 354 CES Environmental Planning Eielson AFB ph: 377-3365	Environmental Planning
Major Steven Curley	USAF, 354th Combat Training Squadron Eielson AFB ph: 377-1400	USAF Operations
Capt. Robert Scott	USAF, 354th Combat Training Squadron Eielson AFB ph: 377-1400	USAF Operations
Sarah Conn	Northern Alaska Ecological Services U.S. Fish and Wildlife Service Fairbanks ph: 456-0203	Wildlife Biology, Endangered Species
Joan Dale	State Historic Preservation Office Anchorage ph: 269-8718	Cultural and Historical Resources
Greg Poyner	Nugget Construction Anchorage ph: 344-8365	Contractor
Donald Adams	Village of Tetlin	Scoping Participant
Gerald Albert	Village of Northway	Scoping Participant
Jerry Issac	Village of Tanacross	Scoping Participant
Wayne Miller	Village of Dot Lake	Village of Dot Lake
David Howard	Village of Eagle	Village of Dot Lake

Peter Bowers	Northern Land Use Research Inc. Fairbanks ph: 474-9684	Cultural Survey Contractor
Lt. Aubrie Ireland	USAF 354th Combat Training Squadron Eielson AFB ph: 377-4968	USAF. Operations
Jeannie Proulx	State of Alaska Department of Natural Resources Fairbanks ph: 451-2748	DNR Lands
Robert Layne	State of Alaska Department of Natural Resources Fairbanks ph: 451-2735	DNR Lands
Jim Durst	Alaska Department of Natural Resources, Habitat Management Office Fairbanks ph: 459-7254	Fish Habitat Permit
Tom Slater	USAF, 354 CES Natural Resources Eielson AFB ph: 377-5182	Natural Resources
Barbara Larweth	USAF, 354 CES/CERR Eielson AFB ph: 377-3142	Real Estate

6.0 Bibliography, Glossary, and Attachments

6.1 Bibliography

Alaska Regional Profiles Yukon Region Volume 6, University of Alaska, Arctic Environmental Information and Data Center, 1976.

Alaska's Wildlife and Habitat 1973. State of Alaska Department of Fish and Gam Freeman, L.H., 1995. Guidelines for NEPA Documents. Franklin Quest Co., Shipley Associates Division. Bountiful, Utah.

Morrison, M.L.; Pollock, K.H. Development of a Practical Modeling Framework for Estimating the Impact of Wind Technology and Towers on Bird Populations. NREL/SR-440-23088. Golden, Colorado: National Renewable Energy Laboratory.

Resources of Alaska – A Regional Summary Joint Federal State Land Use Planning Commission, 1974.

US Navy 1992. Radiation Hazards, NAVSEA OP3565/NAVAIR 16-1-529. Volume 1

US Air Force. 1995. Environmental Impact Statement of Alaska Military Operations Areas – Volume 1 – 3.

US Army Alaska, Department of the Army, 1998. Alaska Army Lands Withdrawal Renewal. Final Legislative Environmental Impact Statement Volume 1 – 2.

Viereck, L.A.; Dyrness, C.T.; Batten, A.R.; and Wenzlick, K.J., 1992. The Alaska Vegetation Classification. US Department of Agriculture Forest Service.

6.2 Glossary

Erosion – The wearing away of soil or organic matter by flowing water or wind.

Loess – Unstratified deposits of silt and loam that are primarily deposited by the wind.

Mitigate – To reduce or negate the effects of an environmental disturbance.

NORAD – a binational command involving the United States and Canada which provides warning of missile and air attack against both of its member nations, safeguards the air sovereignty of North America, and provides air defense forces for defense against an air attack.

Permafrost – Permanently frozen subsoil.

Physiographic – A region containing the same general natural characteristics.

Radio Frequency Radiation – Radiofrequency radiation are electromagnetic radiation in the frequency ranges 3 kilohertz (kHz) - 300 Megahertz (MHz). The primary health effect of RF energy is a result of heating. The absorption of RF energy varies with frequency and may be absorbed in deep body organs. Use of RF radiation includes: radios, cellular phones, communications transmitters, radar transmitters, and microwave equipment.

Recharge – Surface water which percolates through porous soils to become part of the groundwater.

Upland – The higher parts of a region or tract of land.

Wetlands – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soils conditions.

7.0 Section 106 Consultation

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

FILE

2 April 2005

Jim Nolke
354 CES/CEVP
2310 Central Ave Ste 100
Eielson AFB AK 99702-2299

Judith E. Bittner
State Preservation Officer
550 W 7th Avenue Suite 1301
Anchorage AK 99501-3565

Dear Ms Bittner

Eielson Air Force Base is proposing to construct a new radar facility on Taylor Mountain, near Chicken, Alaska. This radar facility will address the need for additional airspace coverage in portions of the Military Operating Air Space (MOAs) that currently do not have sufficient aircraft radar coverage. In addition to the radar facility and supporting power generation equipment, a 7.0 mile road would be needed to access the facility for refueling the power system and performing maintenance on the radar facility.

We are currently writing an environmental assessment that will address impacts associated with this project. It will be available for public and agency review within a few weeks. In addition, we contracted with Northern Land Use Research, Inc. (NLUR) to conduct an archeological survey to support our Section 106 consultation process. This survey was completed last summer and is enclosed for your consideration. As is documented in the report, NLUR found no evidence of cultural resources within the proposed road corridor and radar facility site. They conclude that there would be no foreseeable impact to significant cultural resources by construction of the proposed road and radar facility.

This letter and the enclosed survey report is submitted to you as part of our responsibility to comply with Section 106 of the Historic Preservation Act. In the event that historic or archeological resources are discovered during construction, work would be stopped until a professional archeologist had evaluated the site and the State Historic Preservation Office had been notified of such findings.

If there are any questions with regard to the information provided in this letter, please contact me at 907-377-3365.

Sincerely,

Jim Nolke
Environmental Planning Manager

8.0 Wetlands Permit

Note: The wetlands permit was approved by the Alaska Army Corps of Engineers on June 21, 2005. We are awaiting a hard copy in the mail.

9.0 Public Notice

This public notice appeared in the Daily News Miner on 14 April 2005.

USAF ANNOUNCES
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ENVIRONMENTAL ASSESSMENT

In accordance with the National Environmental Policy Act (NEPA), and Air Force Regulations, Eielson Air Force Base has completed a Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) to evaluate the consequences of the following proposed action:

Construct a radar facility and a 7.9-mile access road at Taylor Mountain, Alaska. The radar facility will provide radar coverage for portions of the Military Operating Areas that currently do not have adequate coverage, providing significantly increased air safety for military and civilian aircraft. Approximately 3.57 acres of wetlands will be filled as a result of project construction.

PUBLIC COMMENT WELCOME

To review the draft EA and FONSI, copies are available at the Noel Wien Library in Fairbanks. The public is invited to review these documents and make comments during the 30-day comment period from now until May 15, 2005. To get a copy of the EA, to comment, or for more information contact Capt. Bradley Jessmer, 354 FW/Public Affairs, at (907) 377-2116, 3112 Broadway Ave., Unit 15A, Eielson AFB, AK 99702-1899.